

# **Facilities and Infrastructure Recapitalization Program (FIRP – 10 Remarkable Years)**



## **FIMS Real Estate Workshop**

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# **FIRP – 10RY Introduction**

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- **As I look around and recall that I was here last year, I conclude that:**
  - **I am privileged to return**
  - **I have been invited for one of two reasons:**
    - **I Must provide an interesting presentation. . .  
or**
    - **I provided a message you remembered!**



# **FIRP – 10RY Back Story**

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- **Last year I opened with a pithy Chinese Blessing – “May you live in interesting times.”**
- **And concluded -- We do!**
- **I also framed the problem that we should all concern ourselves about – take care of the “Worst First”**
- **NNSA IS LEADING BY EXAMPLE**



# FIRP – 10RY

## NNSA Direction

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**Vision: A smaller, safer, more secure and less expensive enterprise that leverages the scientific and technical capabilities of our workforce to meet all our national security requirements**

- **Transform from a 20<sup>th</sup> century Cold War nuclear weapons complex into a 21<sup>st</sup> century nuclear security enterprise while:**
  - Reducing cost
  - Assuring safety, security and reliability
  - Maintaining the U.S. Government position of no UGTs
  - Changing the infrastructure



# **FIRP – 10RY FIMS History**

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- **FIRP was based on the foundation that the assessment of our facilities was accurate and the information resulting from the assessment was documented in FIMS**
- **To address the “Worst First” our facilities community had to assure ourselves that we recapitalized the most important facilities and infrastructure problems**
- **This is important to**
  - **Enhance the safety of the maintenance workers**
  - **Enhance the safety of our employees**
  - **Improve the Quality of Life for existing workers**
  - **Provide an environment that attracts the finest scientists, engineers and business professionals**
- **So as you can tell from the following slides that some of the worst can be modernized...**



# FIRP – 10 RY

## FIRP Achievements Across the Enterprise



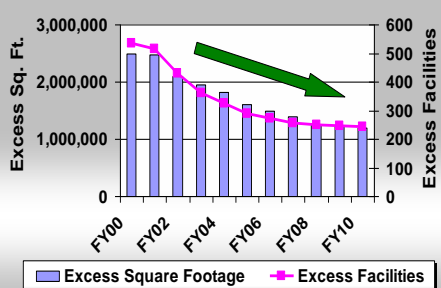
- **KCP**
  - RAMP has been “ahead of the pack” with regards to incorporating cool roof technology into RAMP projects across the Enterprise.
  - RAMP has become a model for both innovative management and utilization of energy saving technology
- **LANL**
  - FIRP funded several projects to extend the life of CMR (a mission critical facility that directly supports the stockpile stewardship mission)
    - Projects include much-needed roofing work, exhaust fans, HEPA filters, and elevator repairs
- **LLNL**
  - FIRP funded electrical upgrades in the NE quadrant and central region of the site which will increase power supply and reliability to support the lab’s super-computing needs (i.e., Sequoia, the lab’s new PetaFLOPs computing system supporting Stockpile Stewardship)
- **NTS**
  - The Mercury Highway line item has paved approximately 31 miles of roads in desperate need of repair
  - RAMP successfully re-roofed the Device Assembly Facility (DAF), a mission-critical facility
- **PTX**
  - The Electrical Distribution System Upgrade (EDSU) provided electrical infrastructure upgrades across the site, improving reliability and availability of power. The project completed ahead of schedule and under budget.
- **SNL**
  - The Heating System Modernization (HSM) project, nearing completion, replaces an old 1950’s-era steam plant with modern more efficient local boilers to meet site heating needs. This project is ahead of schedule and under budget.
- **SRS**
  - Successfully funded HVAC and renovation work across the site utilizing Federal Small Business funding
- **Y-12**
  - The Steam Plant Life Extension (SPLE) and Potable Water System Upgrade (PWSU) projects will complete in FY10. The former replaces an antiquated coal-fired steam plant with modern, natural gas boilers and the latter provides upgrades, better reliability and compliance with regulatory requirements for the plant’s potable water system.



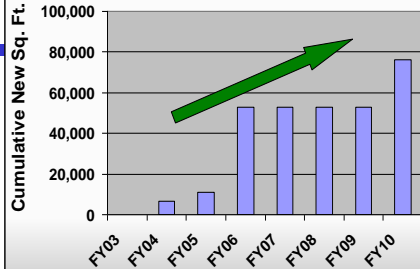
# FIRP: Transformation to a smaller, more efficient Y-12

## *A Decade of Infrastructure Improvements*

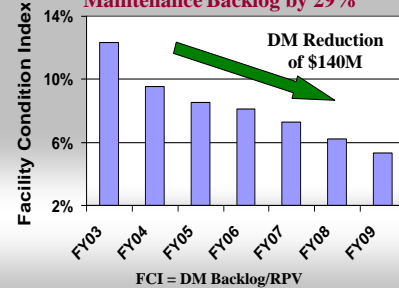
**Reduced Excess Square Footage by 52%**



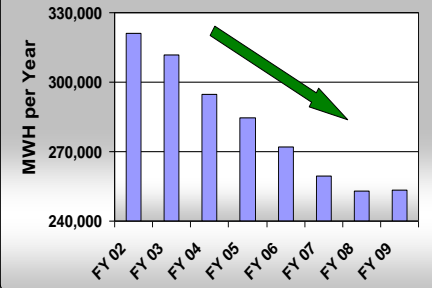
**Construction of Energy Efficient Facilities**



**Improved FCI by 57% and Deferred Maintenance Backlog by 29%**



**Reduced Electricity Consumption by 21%**



**Y-12's first demolition**



**Construction of New Change House Facility**



**3 new facilities built under the Small Business Initiative**



**Awarded 36 Small Business Contracts totaling \$26M**



**Over 30 acres of new roofing from \$20M RAMP investment**



2001 2002 2003 2004 2005 2006 2007 2008 2009 2010



**Initiation of Roofing Program**



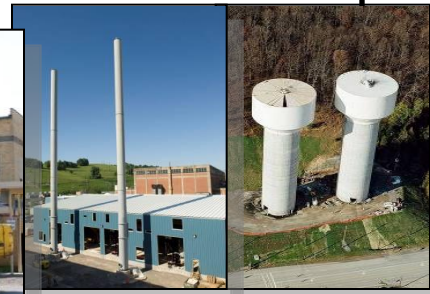
**Demolition of Administration Facility clears path for new Jack Case Center**



**\$140M in DM reduction, including critical Kathabars**



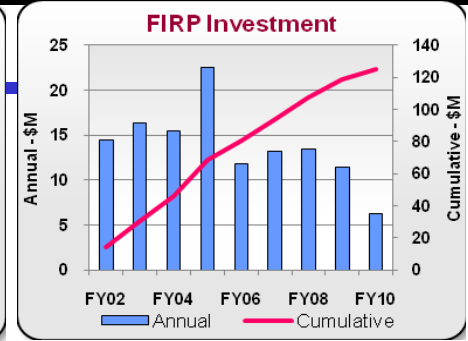
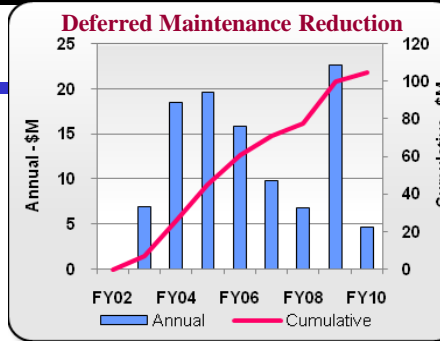
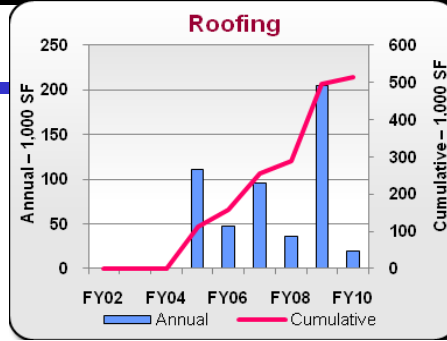
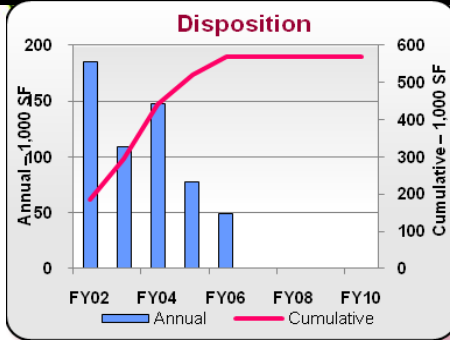
**Achievement of NNSA 3 million-ft<sup>2</sup> goal**



**\$145M investment in 3 Utility Line Item Projects**

# FIRP: Transformation to a Smaller, More Efficient NTS

## *A Decade of Infrastructure Improvements*



**First of 10 Power System Upgrade Projects**



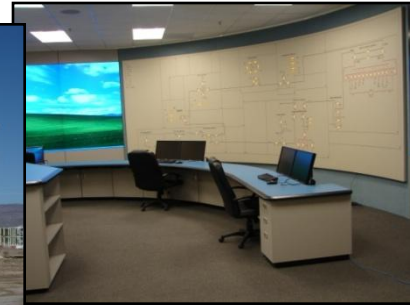
**Replaced 8 Miles of Water Lines**



**2 New Water Tanks, 5 Water Tanks Refurbished**



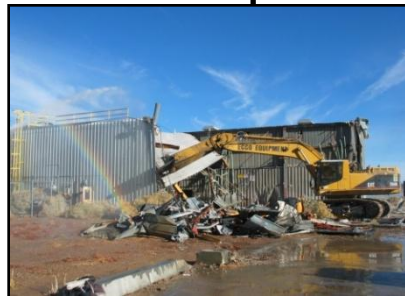
**Power Supervisory Control and Data Acquisition System**



**Reconstructed 31.7 Miles Of Mercury Highway**



2001    2002    2003    2004    2005    2006    2007    2008    2009    2010



**Dispositioned 569,000 ft<sup>2</sup> of Excess Facilities**



**5 Microwave System Upgrades Started**



**Initiation of Roofing Program  
309,000 Sq. Ft. Replaced**



**Castle Rock Substation Replacement**



**New DAF Roof  
205,000 Sq. Ft.**



## FIRP Disposition

## FIRP DM Reduction



Reduce deferred maintenance, and renovated infrastructure necessary to execute NSE mission work.

## FCI Trend



Since FY2001, FIRP has eliminated approximately **489,000 GSF**, and funded nearly **\$159M** in **DM reduction** projects at Sandia. The impact of these investments is illustrated by an overall reduction in **FCI** of roughly **3%**. Through demolition, renovation, and restoration projects, FIRP has improved the reliability of many utility infrastructure systems, and reduced energy and water consumption.

**2001**

D&D of TA II  
"Dirty Diamond"  
begins

**2003**

Building 802  
Basement (Small  
Business Contract)

**2005**

Replacement of 46kV  
Feeder begins

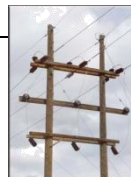
**2010**

Heating Steam  
Modernization  
Completes



**2002**

Construction on  
New Master  
Substation  
begins



**2008**

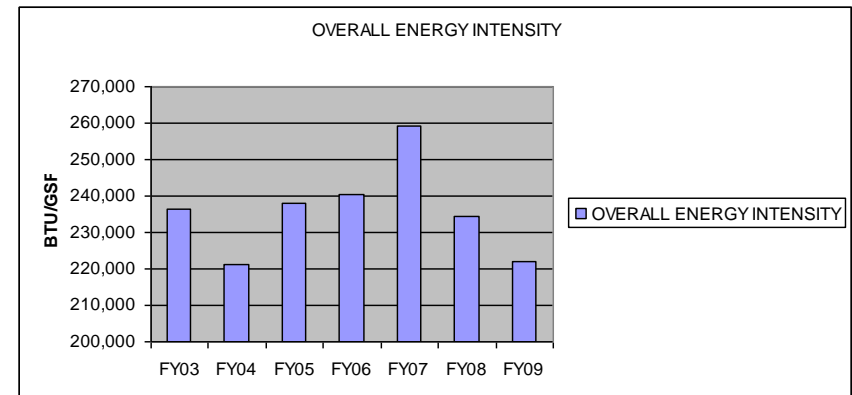
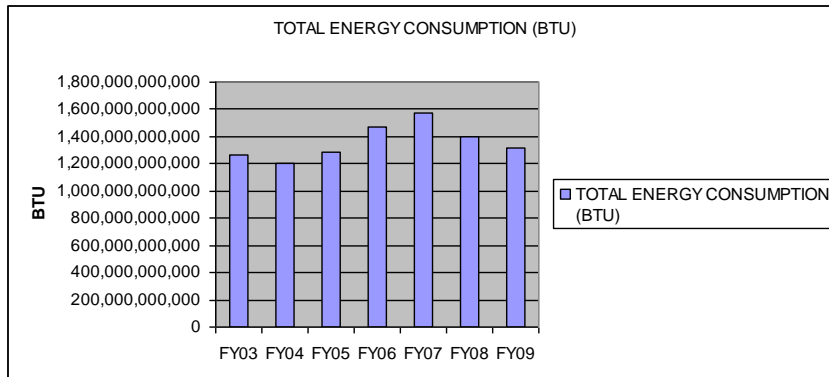
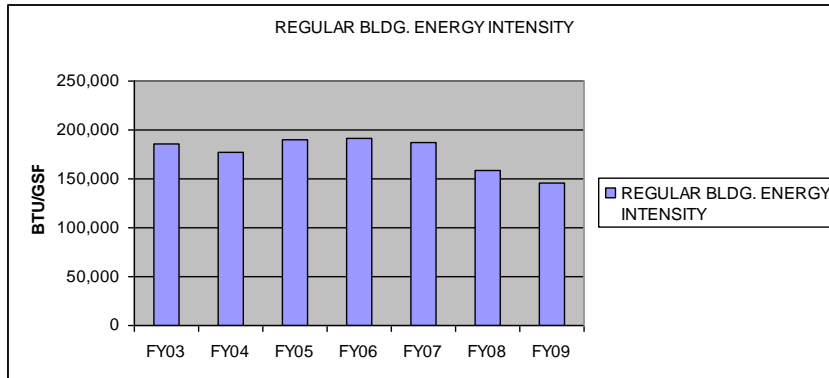
G&H Avenue  
Rebuild Complete  
(Small Business  
Contract)





# FIRP – 10 RY

## SNL Energy Use Reductions







# FIRP – 10 RY

## Sandia National Laboratories

### D & D Tech Area II







# FIRP – 10 RY



## • Power Pole Replacement



## Project Highlights

- Site-wide replacement of deteriorated utility poles executed under two DM specific projects
- 60 year old dated spikes removed from replaced poles which indicate the age of the poles
- Current pole replacement activities yielding a 3 to 1 return on DM reduction vs. actual expenditures



# FIRP – 10 RY



- 9202 Low Voltage Distribution System Deficiencies
- Supply Fan #3, Building 9995



**Before**



**After**

## Project Highlights

- Replaced aging generator units, lighting panels and other electrical deficiencies in mission essential facilities





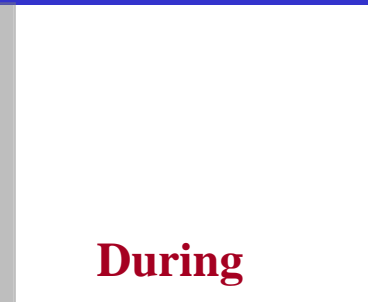
# FIRP – 10 RY



## Replace 9204-2E Oil Filled Switches



**Before**



**During**



**After**

### Project Highlights

- Replaced aging 13.8KVA oil filled switches that support Building 9204-2E
- Old switches were unsafe to operate while under load



# FIRP – 10 RY

## •Roofing Deficiencies in ME Facilities (RAMP)

**Before**



**After**



### Project Highlights

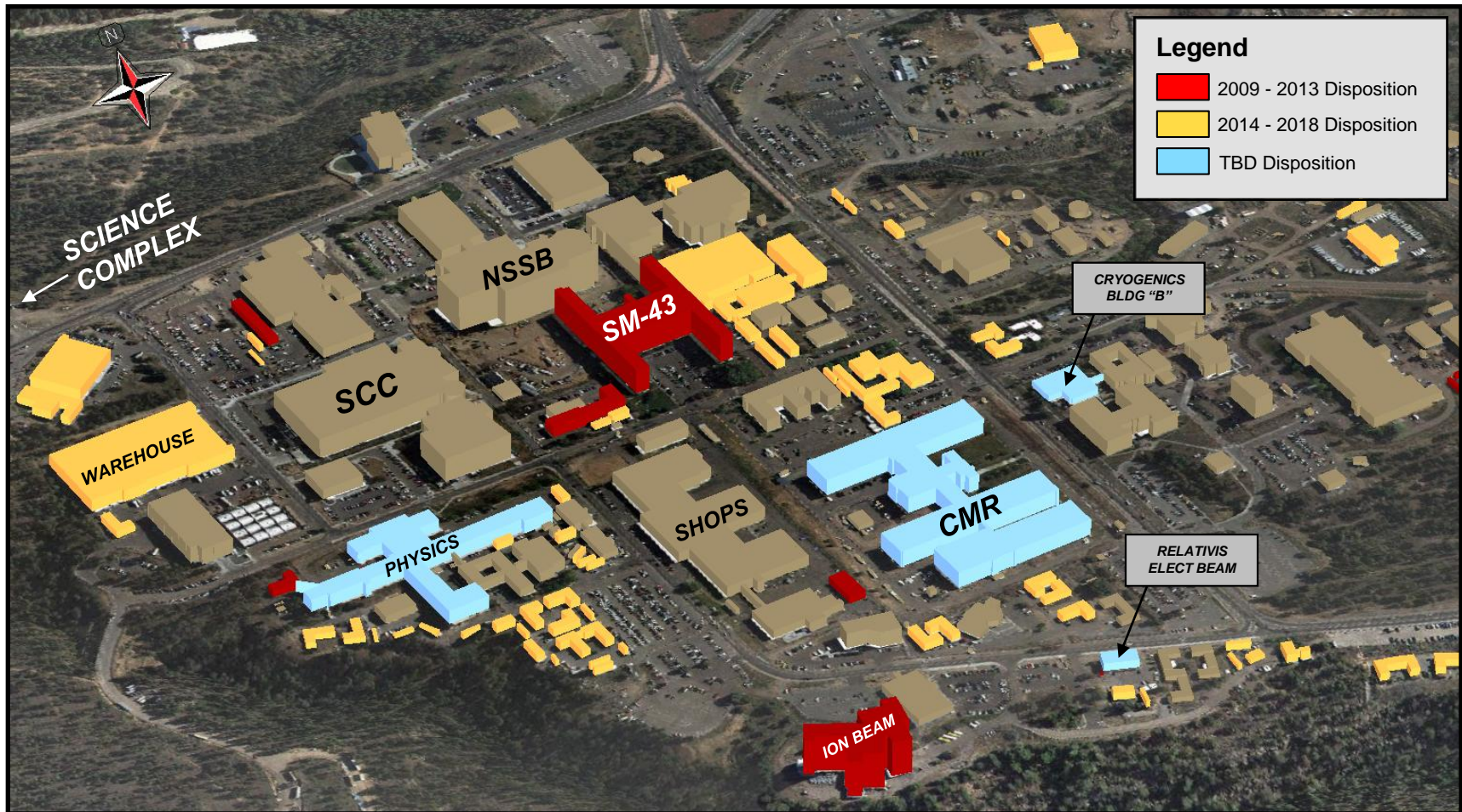
- Replaced 24,500 sq. ft. of roofing on 3 facilities in support of the NWC sponsored Roof Asset Management Program
- Completed repairs on 6 facilities





# FIRP – 10RY

## LANL Planned Disposition Through 2018



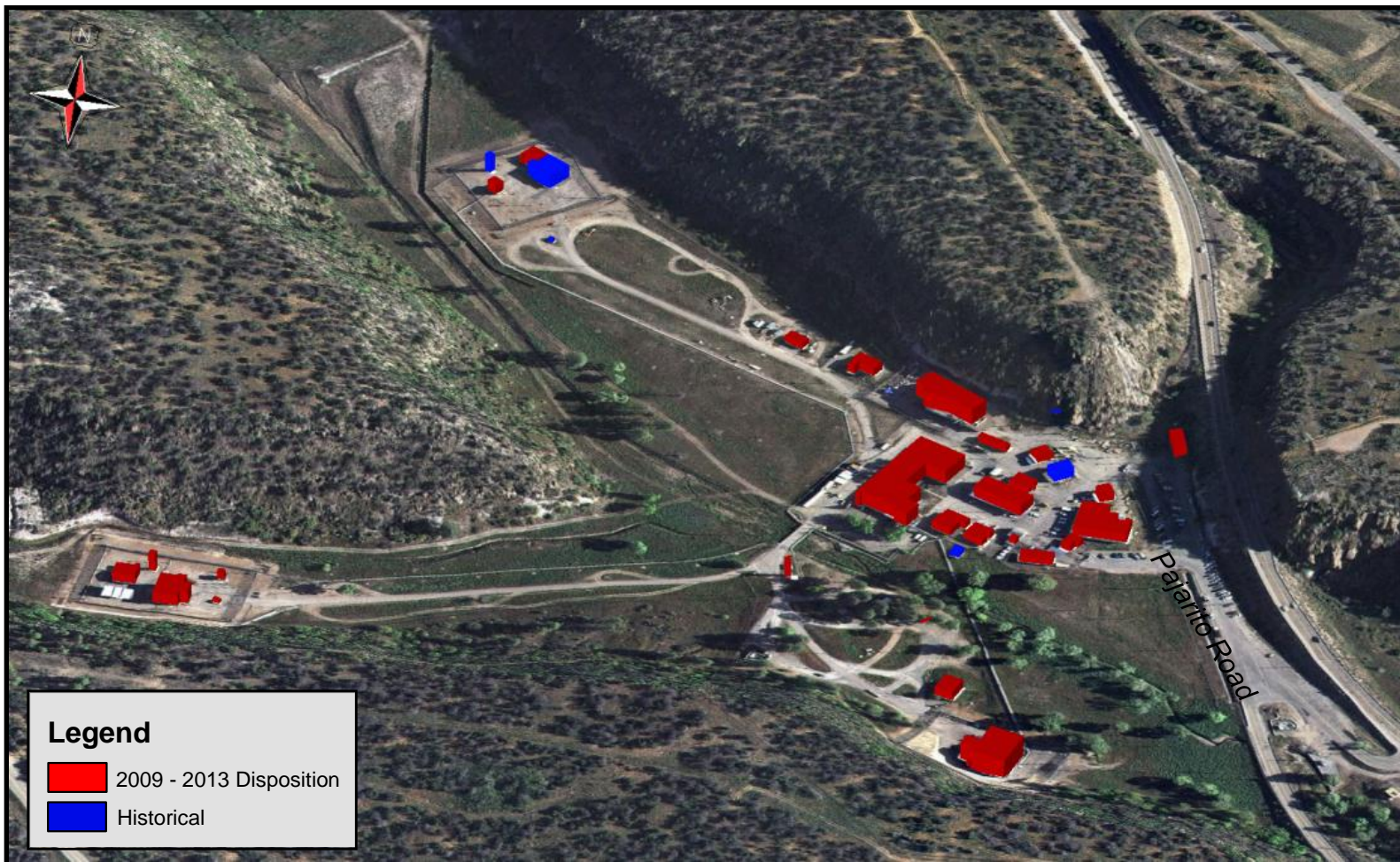




# FIRP – 10 RY



## TA-18 Planned Disposition 2009-2018





# FIRP – 10RY Y-12 Cooling Tower

**Before**



**During**



**After**



## Project Highlights

- Replaced two aging Cooling Tower Units
- Cooling tower capability is critical for mission essential storage and processing activities





# FIRP – 10RY

## Y-12 Small Business Projects



### Weapons Records Storage



### Garage Service



### Technical Support Facility I



# FIRP – 10RY Disposition Projects



**During**



**Before**



**After**



## Project Highlights

- 121,824 ft<sup>2</sup>
- Largest facility demolished at Y-12





# FIRP – 10 RY LANL FIRP Photos







# FIRP – 10 RY LANL FIRP Photos







# FIRP – 10 RY LANL FIRP Photos







# **FIRP – 10 RY**

## **By Way of Review**

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- **I provided you with the NNSA's Vision and Direction, which remains constant**
- **And, pointed out why the NNSA and DOE depend on your creative, innovative, in general hard work burnishing the FIMS Database**
- **A few words here in passing**



# **FIRP – 10 RY**

## **DOE & OECM Initiatives**



- **The NNSA supports the Secretary's and OECM's Policies and Initiatives**
- **NNSA supports OECM's goal to disabuse critics of the assertion that FIMS contains unreliable data**
- **FIMS is the Department's official Real Property database - Data goes to the FRPC and OMB**



# **FIRP – 10 RY**



## **Importance of FIMS to NNSA**

- **FIMS is the backbone of our analytic tools**
- **My organization needs this vital database which is the basis for organizing and providing an improved infrastructure across the enterprise**
- **With improved data quality and completeness, I depend even more on FIMS for showing progress in facility disposition, recapitalization, and line items.**
- **I continue to use FIMS to track trends, compare and contrast TYSP information, and rely on the data for making budget and strategic decisions.**
- **Nothing matches this database anywhere in the DOE as it grows more elegant each year**



# **FIRP - 10 RY**

## **Importance of FIMS to NNSA**

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- **Annual progress is achieved thanks to the attention to detail that has come to mark the work you do – and I am especially grateful for your excellence**
- **In FY 2009, we revitalized the data.**
- **In FY 2010, we continue to be committed to data quality.**
- **In FY 2011, I await your surprise!**



# **FIRP – 10 RY**

## **FCI – Evidence Makes the Case!**

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**Facility Condition Index <Less is More> is a reliable metric for displaying how well our facilities are maintained**

<b>NNSA</b>	<b>FY08</b>	<b>FY09</b>	<b>Delta</b>
<b>MC</b>	<b>4.26%</b>	<b>3.37%</b>	<b>0.89%</b>
<b>MDNC</b>	<b>8.55%</b>	<b>7.66%</b>	<b>0.89%</b>
<b>NMD</b>	<b>12.77%</b>	<b>9.74%</b>	<b>3.03%</b>
<b>Total</b>	<b>7.86%</b>	<b>6.55%</b>	<b>1.31%</b>





# **FIRP – 10 RY**

## **FIMS Makes A Difference**

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- **Based on the foregoing, it should occur to you that FIMS threads its way through our facility operations on many levels, which makes me dependent upon your work**
- **My organization, from the beginning of NNSA, supported the growth, development, and evolution of this vital database**
- **I depend upon FIMS to provide the basis for measurement of progress and failure in my world of recapitalization, utility line items, and facility deactivation and demolition**
- **I depend upon FIMS to provide the basis for discerning trends and allowing me to compare and contrast information appearing in our TYSP**
- **Bottom Line – Press on with your effort to improve the quality of the data – hold us all accountable!**



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# **NNSA**

# **Sustainability and Energy**



# President Signs E.O. 13514



**On October 5, 2009 President Obama signed Executive Order 13514 – *Federal Leadership in Environmental, Energy, and Economic Performance*. This order builds upon E.O. 13423 – *Strengthening Federal Environmental, Energy and Transportation Management*).**

**On January 29, 2010, President Obama set a goal of 28% reduction in GHG (scope 1 and 2) by 2020. S-1 memorandum of March 31, 2010 commits DOE to 28% GHG reduction by 2020.**



# Sustainability



## NNSA Administrator Direction

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- NA-1 memorandum, “NNSA Leadership in Sustainability” of April 19, 2010
  - **“NNSA will continue to lead through example by proactively supporting the sustainability and energy goals set forth in E.O. 13514 and related Orders and legislation.”**
  - **“ . . . we each have a responsibility to evaluate our operations, processes and programs with energy use and sustainability in mind and take the necessary steps to improve effectiveness and efficiency.”**
  - **“ . . . NA-50 will take the lead in developing appropriate NNSA policies and guidance in support of implementation”**
  - **“I fully support the Department’s sustainability initiatives and look forward to our continued progress towards enhanced energy independence and security.”**



# NNSA Sustainability and Energy Management

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- NA-50 is working in partnership with Sites/HQ Programs to support achievement of mandated (regulatory, Executive, DOE order) goals.
  - **NNSA's implementation strategy will be consistent with the soon-to-be-published DOE Strategic Sustainability Performance Plan (SSPP).**



# Context

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- NNSA contributes approximately 37% of the Department's GHG emissions
  - Many of NNSA's buildings/systems across the enterprise are "old"/energy inefficient and/or high-energy
  - NNSA is critical to DOE success
- Implementation of new E.O. 13514 increases "energy" scope and funding requirements for NNSA
  - Additional analyses is essential prior to establishment of program budget and associated targets



# NNSA Sustainability and Energy Management

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- Proposed Energy Modernization and Investment Program (EMIP) direct funding beginning in FY 2011 supports the Stockpile Stewardship Program (SSP) mission and is a key component of NNSA's energy management strategy.
  - Roof Asset Management Program (RAMP) in the outyears under EMIP (FY15 and beyond) [funded under FIRP through FY13].
  - LANL's Sanitary Effluent Reclamation Facility (SERF) will save 115 million gallons of water a year [FY11 Proposed: \$15M]
  - Other high priority projects selected from the EMIP Integrated Prioritized Project List (IPPL) [FY11 Proposed: \$6.6M]





# NNSA Sustainability and Energy Management

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- Promoting best business practices for energy and sustainability management at NNSA sites, including no-cost/low cost energy savings initiatives
- Leadership in Energy and Environmental Design (LEED) Gold for new construction and major renovations and 15% compliance with Guidance Principles for Existing Buildings



# Energy Modernization and Investment Program (EMIP)

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- Clear Purpose: To promote sustainability of NNSA's facilities and infrastructure and enhance National Security by funding discrete projects that:
  - Reduce GHG emissions;
  - Increase energy and water efficiency;
  - Support Sustainable buildings;
  - Implement renewable energy solutions.
- Strong Program Management:
  - Proven resources in place to effectively manage and execute
- Clear Economic and Social Benefits:
  - EMIP makes good business sense – reducing GHGs and energy consumption will result in cost savings/avoidances and a smaller carbon footprint



# Facilities and Infrastructure Recapitalization Program



**Project Video**







# SNL: Steam Plant Demolition

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<http://www.youtube.com/NNSANews#p/a/u/0/-HJ3oKI7cqA>



# Takeaway Message

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- FIRP continues to “get the job done” in support of a transformed nuclear weapons complex. FIRP is a known commodity as a contributor to consolidation activities and resultant footprint reduction
  - The success of the energy management program will also be linked to the ability to support the NNSA mission
  - The energy management program will be managed using the successful FIRP model



# Takeaway Message

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- FIRP for 10 remarkable years has delivered major improvements and revitalizes the condition of the nuclear weapons complex. Success stories are routine outcomes at the eight NNSA sites
  - The success and measure of FIRP continues to be its link to a successful Condition Assessment program and a quality FIMS data base. The timely retirement of deferred maintenance deficiencies and excess facility footprint after work is complete is critical





# Takeaway Message

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- All of NNSA is dependent on the critical data provided through your efforts
- Please sharpen your **Judgment** by broadening and extending your **Experience**.
- Share your successes with the Laboratory Directors, the Plant Managers, the Physical Scientists, the engineers/technical professionals and the business professionals